

Electric Vehicle Charging Infrastructure

March 2019

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REPORT



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Chair's foreword

Switching to electric vehicles would bring significant benefits for Wales. They are likely to play a huge part in the decarbonisation of our transport network. They will contribute to action on climate change, improve air quality and potentially transport poverty too, through cost effective car clubs.

Electric vehicle use is on the rise. Technological advances mean that electric cars can go further than ever on a single charge, and the batteries are likely to outlast the cars. Although more costly upfront, electric cars are cheap to run and maintain. While questions remain about how to ensure wider access to electric vehicles, it is clear that they are likely to grow in popularity in years to come.

The UK Government has welcomed this prospect, and has gone as far as saying that all petrol and diesel cars should be phased out completely by 2040. The witnesses we heard from during the inquiry welcomed the announcement, calling for the deadline to be made all the more ambitious.

But increased use of electric vehicles will require changes to our infrastructure. Petrol and diesel is freely available on forecourts across Wales, but the Committee heard that "range anxiety", the fear that a car will run out of charge before reaching the next charging station, is a barrier to electric vehicle uptake.

This report considers the infrastructure needed in Wales to encourage the use of electric vehicles, and some of the actions we could be taking now to make the most of the opportunities that a shift to electric transport could bring.

The Committee has taken the unusual step of publishing this draft report with emerging conclusions ahead of its scrutiny session with the Cabinet Secretary for Economy and Transport in order to widen the debate on this issue. We would encourage interested parties to respond to our discussion points.

Witnesses were clear that urgent action is needed and we look forward to discussing that action with the Minister to drive this agenda forward.



Russell George, Chair, Economy, Infrastructure and Skills Committee.

Emerging conclusions and discussion points

Emerging Conclusion 1. The infrastructure in Wales for electric vehicles currently limited, in particular in terms of rapid chargers. Current infrastructure would struggle to cope with a significant increase in EVs. Coverage has been described as patchy, sporadic and at times unreliable. Payment and membership systems are confusing for customers and there has been little co-ordination in the roll out of charging facilities. The Welsh Government needs to ensure it has a clear picture of current charging infrastructure in Wales, including any gaps, and a clear vision for what it wants to achieve..... Page 14

Discussion points:

- Does the Welsh Government have a clear vision for EV charging infrastructure in Wales, or an accurate overview of the current state of the charging network?
- Should EV charging infrastructure be an issue for consideration by the Decarbonisation Ministerial Task and Finish Group? How much of an impact could an accelerated uptake of EVs have on helping Wales achieve its decarbonisation ambitions and targets?
- What is the role of the Welsh Government in co-ordinating roll out of EV charging across Wales? Should the Welsh Government and local authorities be engaging with private charging companies about their plans for developing EV infrastructure? And if so, how?14
- What role should Transport for Wales play in the development of EV charging infrastructure across Wales?
- Has enough consideration been given to the impacts of car free urban areas, where active travel is the main mode of transport? How should this be taken into account when developing EV charging infrastructure in urban areas? Page 15

Emerging Conclusion 2. Welsh Government needs to show leadership and demonstrate a commitment to electric vehicles. Action to date has been slow in this area, and there is an urgent need for the development of fit for purpose infrastructure. The Low Carbon Expert Steering Group developed a number of useful recommendations around electric vehicles and associated infrastructure. The Committee is interested to understand whether these recommendations remain fit for purpose, and which the Welsh Government should consider

implementing. The Committee welcomes the £2m investment in rapid charging infrastructure, and is interested in views on the Minister's plans to deploy this funding.....Page 20

Emerging Conclusion 3. There is a need to take urgent action to encourage the use of EVs instead of petrol and diesel cars, while developing an integrated transport policy which places electric cars in the context of the sustainable transport hierarchy that is fair to all.....Page 20

Emerging Conclusion 4. Both immediate action and long term planning should include engagement with key stakeholders (including local authorities) and those with expertise in emerging EV technologies.....Page 20

Emerging Conclusion 5. While supporting and encouraging the transition to electric vehicles in the early days is important, there is also need to ensure that public money is not spent purely for the benefit of those who need it least. Consideration should be given to who benefits from charging points and whether it is appropriate to use more public money to develop the charging infrastructure in areas where private investment could be attracted. These considerations should be balanced by the desirability of ensuring electric vehicle uptake is maximised in Wales.....Page 20

Emerging Conclusion 6. should be taken to ensure that the poorest people are not left owning ageing and obsolete petrol and diesel vehicles with no access to electric vehicles. Alternative forms of ownership, such as car clubs and other models, should be fully explored and communities supported to introduce local solutions.....Page 20

Discussion points:

- Does Wales need an overall strategic plan for the development of EV charging infrastructure in Wales, that brings together plans for public funding alongside private investment? How can the balance between public and private investment best be struck? What should the Welsh Government be doing to support and encourage private investment?
- What would be a realistic target for Welsh Government to convert its fleet to electric? Should there be a target for other public sector bodies?
- Is the £2m of funding allocated by the Welsh Government to date enough to make a significant improvement to EV charging infrastructure in Wales? Does more funding need to be made available?

- Given the concerns raised about the lack of a co-ordinated approach between the Welsh Government and local authorities, is there a need for a two way protocol to communicate work underway and planned in this area?
- What is the best forum/mechanism for the Welsh Government to engage with stakeholders?
- How should local and national strategies on developing EV charging work together?
- How can communities be encouraged and supported to develop local charging solutions?
- Should the Welsh Government be supporting the development of electric vehicle car clubs, or should this be left to the market and local communities? Page 21

Emerging Conclusion 7. Building the confidence of drivers to see electric cars as suitable for their “out of pattern” journeys as well as their everyday travel will go some way to relieving the range anxiety that currently exists. Ensuring that EV users know that Wales is equipped with the charging infrastructure it needs will be key to addressing this issue..... Page 24

Emerging Conclusion 8. The Welsh Government must work closely with the National Grid and District Network Operators to ensure the grid can be developed to accommodate its aspirations for EV charging in Wales. Page 25

Discussion points:

- Is there a role for Welsh Government in promoting awareness of the benefits of owning or leasing electric vehicles? For views on the effectiveness of the UK Governments Plug-in Car grant scheme in increasing EV uptake.
- How could the Welsh Government help make sure that EV users are easily able to find suitable charging points across Wales, to help mitigate “range anxiety”? Options could include clearer, uniform signposting on major roads or the development of a Welsh Government app showing the location of charging points across Wales.

- Would it be sufficient for Welsh Government to develop its vision and strategy, and allow National Grid and District Network Operators to ensure the grid can be developed to accommodate its aspirations for EV charging in Wales? Or is more intervention needed?
- What could the Welsh Government do to support the co-location of renewable energy projects with EV charging infrastructure? Page 25

Emerging Conclusion 9. The Committee has previously reported on the need to include provision of mobile phone coverage and broadband in the plans for any new build developments. It is clear that including electric vehicle charging points in the design for new builds is another important step towards behaviour change and creating liveable community infrastructure. Page 27

Emerging Conclusion 10. The inclusion of bays and charging points for electric vehicles in the plans for new hospitals and other healthcare facilities would be beneficial to community transport operators, and others. Page 28

Emerging Conclusion 11. There is a need to explore and develop emerging and innovative charging technologies. Welsh universities can play a key role in research and development in this area. Page 28

Discussion points:

- Planning Policy Wales: Edition 10 only makes recommendations for EV charging infrastructure for non-residential developments. The Committee feels that the policy would have been an opportunity to provide guidance for EV charging for residential developments too. Does planning policy need to be revised to provide guidance for charging on residential developments too? If not, why not?
- What are the potential charging solutions for those people without off street parking?
- Is the expertise to develop effective, fit for purpose charging infrastructure available in Wales – for example, in local authorities, the Welsh Government, Transport for Wales? Is the Welsh Government engaging widely enough with universities and the industry? Could further support be provided? Page 28

Emerging Conclusion 12. It is vital that the needs of rural Wales are not overlooked as electric vehicles become more commonplace. Consideration should be given to how best to provide the right charging infrastructure in the right place to meet local needs. Consideration should also be given as to how to identify and support rural communities that are interested in trialling new transport solutions such as car clubs, as part of a wider transport solution.

..... Page 30

Discussion points:

- How can “the market” be encouraged to invest in rural areas?
- Where should the Welsh Government be focusing funding? Should development of EV charging in more rural areas of Wales be left to the market, or should the Welsh Government intervene? Page 30

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1. Background

The Committee carried out a short, focused inquiry in to electric vehicle charging infrastructure in Wales. It has produced this draft report, and will publish a final version following consideration of stakeholder responses, and discussions with the Minister for Economy and Transport.

- 1.** The inquiry followed the Committee's work on automation and the future of Wales. The Committee will continue to consider related issues throughout the remainder of this Assembly.
- 2.** A written consultation ran from September to November 2018 and received 17 responses¹.
- 3.** The Committee then took oral evidence from the Institute of Welsh Affairs (IWA), Carmarthenshire Energy and the Electric Vehicle Centre of Excellence (Cardiff University) on 29 November. Power suppliers National Grid and Western Power Distribution (WPD) gave oral evidence on 5 December.
- 4.** The Committee agreed to publish a draft report ahead of its scrutiny session with the Minister for Economy and Transport. This draft report will be sent to the Minister, and also to stakeholders for comment. The emerging conclusions from the report will be discussed with the Minister in a future Committee meeting.
- 5.** Following that session, a final report will be published to replace this draft.

¹ [Written consultation responses](#)

2. Introduction

Throughout the inquiry, the Committee has heard a clear and consistent message: the switch to electric vehicles is happening, and leadership and action is needed now.

6. In 2018, an RAC survey found that 5 per cent of drivers in Wales said the next vehicle they intended to purchase will be a plug-in hybrid and a further 2 per cent said they would buy a pure battery electric vehicle. Given there are 1.9 million licenced drivers in Wales, this could mean an additional 133,000 electric or hybrid vehicles on Welsh roads in the next few years.²

7. However, the Institute of Welsh Affairs told the Committee “in 2017, of the 1.5 million cars registered in Wales, around 2,500 of them were EVs, making up just 0.019 [percent] of the UK’s 130,000 strong fleet”.³

Decarbonisation

8. Decarbonisation is increasingly becoming a priority for the Welsh Government. It has added decarbonisation as a sixth priority in Prosperity for All⁴ since July 2018 and established a Decarbonisation Ministerial Task and Finish Group. Wales also has ambitious new climate change targets under the *Environment (Wales) Act 2016* and the *Climate Change (Wales) Regulations 2018*⁵.

9. According to the latest figures from the UK Committee on Climate Change (UK CCC)⁶ transport in Wales accounts for 13 percent of Wales’ emissions⁷. Transport emissions increased by 2% in Wales in 2016, the third consecutive annual increase. Sustrans Cymru told the Committee that in 2018, “the average concentration of carbon dioxide (CO₂) in the atmosphere has hit its highest level in 800,000 years”.⁸ The switch to electric vehicles presents an opportunity to reduce the greenhouse gas emissions produced by transport in Wales, and

² [Consultation response 02: RAC Motoring Services](#)

³ [Consultation response 17: Institute of Welsh Affairs](#)

⁴ The Welsh Government’s “National Strategy”

⁵ [Senedd Research blog, Climate Change \(Wales\) Regulations 2018 and the Environment \(Wales\) Act 2016](#)

⁶ [UK CCC Progress Report to Parliament 2018](#)

⁷ [Consultation response 17: Institute of Welsh Affairs](#)

⁸ [Consultation response 16: Sustrans Cymru](#)

improve air quality - but the infrastructure to support the switch needs to be in place for the transition to be successful.

10. The Institute of Welsh Affairs called for an integrated transport strategy in which electric vehicles are:

“seen as part of a wider system that effectively looks at the sustainable transport hierarchy and really thinks about what are our place-based solutions to driving and decarbonising transport in Wales. So, what might happen in urban areas might be different to what’s happening in rural areas.”⁹

11. The switch to electric vehicles presents an opportunity to change behaviour too. The Committee has reported previously on the opportunities automated and connected vehicles provide, with some experts predicting a possible shift away from private car ownership.¹⁰ The Institute of Welsh Affairs told the Committee that as our transport system evolves, there is an opportunity to consider:

“transport as mobility, as a service, rather than actually private ownership. So, I think some of the behaviour change comes around that and actually getting people to change their transport modes rather than just changing vehicle for vehicle.”¹¹

12. The promotion of Active Travel and car free cities is another important consideration. Cities across Europe, such as Oslo, are making moves towards becoming car free, and it may be that over time electric vehicle charging infrastructure in our urban areas becomes less critical.

Current charging infrastructure

13. According to the electric charging point map Zap Map, Wales currently has 617 charging points, 3.32% of the UK’s total.¹² A key message from the written evidence was that the current charging infrastructure in Wales is not fit for purpose, with coverage being sporadic and too few available points.

14. In their consultation response, Charge Point told the Committee, “Relative to the rest of the UK, there is currently very little charging infrastructure in Wales, which is curtailing adoption of EV’s by consumers and businesses”. They also

⁹ [Economy, Infrastructure and Skills Committee, 29 November 2018, p239](#)

¹⁰ [Industry 4.0: The future of Wales](#)

¹¹ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 343](#)

¹² [Zap Map](#). Accessed 6 February 18

raised a concern that “a significant number of stations in Wales are not operational”.¹³

15. A key theme from the written evidence is that, to date, there has been little coordination in the early roll out of charging facilities, with companies competing to establish market leadership. This lack of standardisation creates a barrier to EV adoption, with consumers confused by the systems of membership payments, cards and apps.¹⁴

16. The UK Government Office of Low Emission Vehicles (OLEV) offers a number of grants to support the installation of EV charging points¹⁵. The grants are available to individuals, organisations and businesses across the UK.

Emerging Conclusion 1. The infrastructure in Wales for electric vehicles currently limited, in particular in terms of rapid chargers. Current infrastructure would struggle to cope with a significant increase in EVs. Coverage has been described as patchy, sporadic and at times unreliable. Payment and membership systems are confusing for customers and there has been little co-ordination in the roll out of charging facilities. The Welsh Government needs to ensure it has a clear picture of current charging infrastructure in Wales, including any gaps, and a clear vision for what it wants to achieve.

Discussion points:

- Does the Welsh Government have a clear vision for EV charging infrastructure in Wales, or an accurate overview of the current state of the charging network?
- Should EV charging infrastructure be an issue for consideration by the Decarbonisation Ministerial Task and Finish Group? How much of an impact could an accelerated uptake of EVs have on helping Wales achieve its decarbonisation ambitions and targets?
- What is the role of the Welsh Government in co-ordinating roll out of EV charging across Wales? Should the Welsh Government and local authorities be engaging with private charging companies about their plans for developing EV infrastructure? And if so, how?

¹³ [Consultation response 03: ChargePoint Network UK](#)

¹⁴ [Consultation responses 2, 3 and 17](#)

¹⁵ [OLEV Grant Schemes for Electric Vehicle Charging](#)

- What role should Transport for Wales play in the development of EV charging infrastructure across Wales?
- Has enough consideration been given to the impacts of car free urban areas, where active travel is the main mode of transport? How should this be taken into account when developing EV charging infrastructure in urban areas?

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3. Leadership

17. If Wales is to lead the way in the EV transition, it is essential that the Welsh Government sets out a clear direction of travel, and overall strategic vision for EV charging infrastructure. Whilst a long term strategy will be important, action is needed now to ensure Wales isn't left lagging behind the rest of the UK.

18. In 2013, the Welsh Government established the Low Carbon Vehicle Expert Steering Group¹⁶. The Group's remit was to provide the then Minister for Economy, Science and Transport with advice and recommendation of the low carbon vehicle sector in Wales. The Group published its report in September 2015, and a number of recommendations within it related to infrastructure for EV charging. However, in evidence to the Committee, Neil Lewis from Carmarthenshire Energy voiced his concern that none of the recommendations from the report had been implemented¹⁷.

19. As part of the 2018-19 budget deal with Plaid Cymru, the Welsh Government committed £2m in funding to electric car charging points over two years (2018-19 and 2019-20). The Minister for Economy and Transport wrote to all Assembly Members¹⁸ on 22 January providing an update on progress. He outlined that his officials are currently considering the detailed development of the scheme to invest the £2m in a network of rapid EV charging points – ensuring that the deployment of public funds takes into account private sector activity.

20. Good leadership is essential if the opportunities afforded by a shift to electric cars are to be realised. Dr Cipcigan from the Electric Vehicle Centre of Excellence at Cardiff University shared with the Committee her observations on the effect of the UK Government's announcement that conventional car and van sales would end by 2040:¹⁹

“Since the big announcement for the 2040 agenda, basically, there has been such a boom that it is incredible. I can't understand it. All car manufacturers are now making big announcements, and they were not in the past. I am surprised that the political agenda is now a big driver for this technological advance.”²⁰

¹⁶ [Low Carbon Vehicle Expert Steering Group](#)

¹⁷ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 236](#)

¹⁸ www.assembly.wales/deposited%20papers/dp-1760-16-21/dp-1760-16-21.pdf

¹⁹ www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017

²⁰ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 254](#)

21. The National Grid told the Committee that delivering the right infrastructure to support those ambitions is a challenge. He described the need to invest in infrastructure now, in the right places, to ensure we are prepared for the change, saying the Welsh Government “have a really unique opportunity to do it right, do it once, and have a strategic plan”.²¹

22. Witnesses identified the need for a strategy, but one that prioritised swift action. Neil Lewis called for urgent action:

“Because we’re starting from such a low base, we need to get to a certain point and then we can look at the longer term strategies. But I think it’s almost an emergency situation, and bold action is needed. So maybe we need to take a two-stage development so we get to a point where we’re fit for purpose, and then we can develop long term.”²²

23. In terms of governance, Gemserv told the Committee:

“Based on feedback we have received so far from two industry workshops held in collaboration with Energy UK – industry stakeholders are converging towards a consensus that an agile industry-led governance body is needed to deliver strategic oversight, best practice, innovation and novel products for the electric vehicle market.”²³

24. Although there was a general agreement from witnesses giving oral evidence that Transport for Wales was the right body to develop a strategy for EV charging infrastructure in Wales, it was also recognised that there was need for “a clear governance structure in terms of what their responsibilities are long term”²⁴ in order for them to progress this area of work.

Working with stakeholders

25. The Committee heard calls for effective engagement and joint working with key stakeholders to meet the challenges. Western Power Distribution (WPD) told the Committee that “the real opportunity Wales has got is that it’s much easier to

²¹ Economy, Infrastructure and Skills Committee, 5 December 2018, para 34

²² Economy, Infrastructure and Skills Committee, 29 November 2018, para 287

²³ Consultation response 07: Gernserve

²⁴ Economy, Infrastructure and Skills Committee, 29 November 2018, para 285

engage”²⁵ compared to the other areas of the UK that WPD operates in, and called on the Welsh Government to “work with us”²⁶ on a strategic level.

26. The Welsh Local Government Association (WLGA) called for any strategy to involve local authorities as stakeholders, and for it to lead to “a network of facilities”²⁷ that could be used by and benefit all. It also outlined the difficulty faced by local authorities in investing to develop charging infrastructure. Financial constraints are resulting to cut backs in investment in a number of areas. It also highlighted the risk of investing in a local approach, in case strategy at a national level differs. This is despite Planning Policy Wales: Edition 10 saying that planning authorities should take a strategic approach to EV charging infrastructure, and where appropriate, develop policies in their development plan and specify local development. The WLGA said in written evidence that to date, the Welsh Government has not made a concerted effort to work with local authorities in Wales to develop a joined up approach.²⁸

Positive messaging

27. Dr Cipcigan told the Committee it is important to send the right messages to drivers and potential investors. She referred to information published by the UK Parliament recently in which Wales was at the bottom of the table in terms of charging infrastructure and raised concern about the message that sent.

28. Dr Cipcigan also highlighted that Welsh Government’s 72-car fleet was made up entirely of diesel cars with “not even one electric car”.²⁹ A situation in stark contrast to Mid and West Wales Fire and Rescue Service, which has adopted EVs and hydrogen vehicles;³⁰ Milton Keynes, where wireless charging for electric busses has been in place since 2013;³¹ and Swansea Council who have 40 electric vehicles, representing 5 per cent of their fleet.

29. Neil Lewis agreed, saying “there have been no signals from Welsh Government that they believe in electric vehicles”.³²

²⁵ [Economy, Infrastructure and Skills Committee, 5 December 2018, para 80](#)

²⁶ [Economy, Infrastructure and Skills Committee, 5 December 2018, para 158](#)

²⁷ [Consultation response 10: Welsh Local Government Association](#)

²⁸ [Consultation response 10: Welsh Local Government Association](#)

²⁹ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 226](#)

³⁰ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 353](#)

³¹ [Economy, Infrastructure and Skills Committee, 5 December 2018, para 131](#)

³² [Economy, Infrastructure and Skills Committee, 29 November 2018, p 346](#)

Private vs public funding

30. The Committee notes the Welsh Government’s commitment to spend £2 million on charging infrastructure in Wales, a commitment that was welcomed by witnesses, although they also pointed out that the funds have yet to be used.

31. The Committee also noted the need to use public money to support those in society with most need. The Institute of Welsh Affairs told the Committee:

“It can be assumed that the market will provide for EV’s in some areas, as there are already privately operated charging networks. However, without proper planning, Wales runs the risk of seeing a charging network develop only where there are people wealthy enough to purchase electric vehicles and patronise the privately owned facilities. That would almost certainly mean they would predominate in urban areas, the areas most suited to the development of active travel and public transport.”³³

32. The Institute of Welsh Affairs also highlighted the question of who should pay for additional electricity infrastructure, asking, “is it fair for customers in fuel poverty who may never own a EV to pay more on their electricity bill for bill upgrades due to EV charging infrastructure?”.

33. WPD noted that while electric vehicles were currently more expensive than buying a petrol or diesel vehicle “if there is a full ban on all petrol and diesel cars, dumping these polluting cars on poor people is not doing them any service”.³⁴

34. WPD also noted that, in relation to charging infrastructure, business models are currently struggling to make a return on the number of electric vehicles currently on the road, resulting in it being “very difficult to get private finance at scale”.³⁵

35. Richard Burrows, a business owner in mid Wales, called for charging infrastructure to be “developed with local communities and councils so the long term monies produced...are put directly back into local communities rather than into the pockets of major network operators who will export the money out of Wales”.³⁶

³³ Consultation response 17: Institute of Welsh Affairs

³⁴ Economy, Infrastructure and Skills Committee, 29 November 2018, para 309

³⁵ Economy, Infrastructure and Skills Committee, 5 December 2018, para 114

³⁶ Consultation response 08: Richard Burrows

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4. Barriers to EV uptake

36. Although the benefits of electric vehicles are significant, barriers to their uptake remain. This report makes reference in the introduction to the potential for electric vehicles to tackle transport poverty, but under a traditional private vehicle ownership model, the cost of buying an electric vehicle is high, with a popular compact electric hatchback costing close to £27,000 (compared to around £18,000 for an equivalent petrol car).

37. The UK Government currently runs a Plug-in Car grant scheme³⁷ to help people across the UK with the cost of buying an electric vehicle. The grant applies to a government approved list of vehicles – and is administered directly through dealerships and manufacturers. There have been changes to the scheme over the past year – grants for new plug-in hybrids were scrapped, while discounts on all-electric cars were cut from £4,500 to £3,500. The Department for Transport (DfT) say that the grant was introduced seven years ago to help the market become established and that the focus was changing to support zero-emission models such as pure electric and hydrogen fuel cell cars.³⁸

38. For businesses in Wales, the costs can impact the business case for conversion of a fleet. Royal Mail told the Committee that the electric vans they purchased were “two to three times the price of a new Euro 6 compliant diesel”.³⁹ The Institute of Welsh Affairs told the Committee “until those costs reduce, or until there’s a kind of second-hand market, that’s certainly a current barrier”.⁴⁰

39. The Community Transport Association told the Committee that community transport operators in Wales could be particularly affected by new vehicle costs as they are often small charities in deprived communities that find it hard to fundraise. The Association called for support to be made available “to ensure that the cost of installing infrastructure and purchasing an electric fleet are not prohibitive for operators”.⁴¹

40. However, Neil Lewis told the Committee that “all the calculations” show it is cheaper to run an electric vehicle as there are “no petrol costs and no moving

³⁷ www.gov.uk/plug-in-car-van-grants

³⁸ www.bbc.co.uk/news/business-45831150

³⁹ Consultation response 04: Royal Mail

⁴⁰ Economy, Infrastructure and Skills Committee, 29 November 2018, para 223

⁴¹ Consultation response 09: Community Transport Association UK

parts”.⁴² Neil Lewis referenced taxi firms in Dundee that are using electric vehicles, saying, “they’ve done 200,000 miles in their cars, and they’ve only had to replace wiper blades and tyres. There are no ongoing running costs”.⁴³

41. Another key barrier identified was “range anxiety”. The National Grid told the Committee:

“I think the first car in most families does about 37 miles a day, statistically. And, if you’re lucky enough to have a second car, it only does about 11. So, most 150 mile to 200 mile range cars will do generally what you need them to do. the challenge that you really have, though, is people don’t buy a car for average, they buy it for the biggest and longest journey they’ll ever do, and it’s that out of pattern stuff where you need confidence that there is appropriate charging on your journey so that doesn’t interrupt your journey.”⁴⁴

42. The National Grid also told the Committee that it had mapped England and Wales and identified 54 strategic sites for installation of charging points that would mean that 99.6% of the strategic road network is covered for 50 driven miles in any direction.

43. Neil Lewis identified six sites for charging infrastructure that could “unlock” the north to south Wales routes, and recommended installing pairs of rapid chargers at these locations.

44. Given the small amount of chargers needed to make the strategic difference, Neil Lewis felt that the £2 million allocated by the Welsh Government would go a long way. However, he was also clear that the allocated funds have not been spent and that “there’s no private investment and there’s no Government investment”⁴⁵ as a result.

The Grid

45. At the start of this inquiry, the Committee set out to discover if the electricity grid in Wales was able to deal with a significant increase in electric vehicle use. In written evidence the IWA told the Committee that there are significant issues with the grid:

⁴² Economy, Infrastructure and Skills Committee, 29 November 2018, paras 262 & 264

⁴³ Economy, Infrastructure and Skills Committee, 29 November 2018, para 273

⁴⁴ Economy, Infrastructure and Skills Committee, 5 December 2018, para 13

⁴⁵ Economy, Infrastructure and Skills Committee, 29 November 2018, para 249

“The grid is squeezed across the whole of Wales and this impacts on renewable generation, storage and smart use. Electricity grids need to be ‘future proofed’ for decarbonisation when considering electric vehicle roll out and the need for EV charging points.”⁴⁶

46. The Welsh Government has also said that the grid “would struggle to service a significant increase in electric vehicles in Wales”.⁴⁷

47. The National Grid was clear in its response, saying, “under all the scenarios, the grid can cope”.⁴⁸ However, the National Grid only has responsibility for the transmission system (conveying electricity from power plants to substations). Electricity distribution (conveying electricity from substations to consumers) is the responsibility of District Network Operators (DNOs). WPD told the Committee:

“It would be unrealistic to expect that the current grid, as it stands, could cope with 100 per cent penetration of electric vehicles. So, we just need to be realistic about this journey to the electrification of transport [...] there will need to be targeted reinforcement, as well as those things like smart charging, time-of-use tariffs...”

48. Both the National Grid and WPD were clear that, in terms of EV charging infrastructure, they would like to see a forward looking plan that would enable them to develop the network strategically, rather than working reactively⁴⁹. To date, there has been little discussion on the issue between the Welsh Government and the National Grid.

49. Despite the constraints on the grid, WPD outlined a number of potential mitigation measures that could be employed to alleviate pressures. These included smart charging (controlling the time and rate at which the car is charged) and vehicle-to-grid charging (where energy stored in vehicle batteries is fed back into the grid at times of peak demand). A further suggestion was the co-location of charging points close to renewable energy generation locations – a proposal supported by the WLGA.

Emerging Conclusion 7. Building the confidence of drivers to see electric cars as suitable for their “out of pattern” journeys as well as their everyday travel will go some way to relieving the range anxiety that currently exists. Ensuring that EV

⁴⁶ Consultation Response 17: IWA

⁴⁷ Climate Change, Environment and Rural Affairs Committee, 22 November 2018, para 64

⁴⁸ Economy, Infrastructure and Skills Committee, 5 December 2018, para 19

⁴⁹ Economy, Infrastructure and Skills Committee, 5 December 2018, para 33

users know that Wales is equipped with the charging infrastructure it needs will be key to addressing this issue.

Emerging Conclusion 8. The Welsh Government must work closely with the National Grid and District Network Operators to ensure the grid can be developed to accommodate its aspirations for EV charging in Wales.

Discussion points:

- Is there a role for Welsh Government in promoting awareness of the benefits of owning or leasing electric vehicles? For views on the effectiveness of the UK Governments Plug-in Car grant scheme in increasing EV uptake.
- How could the Welsh Government help make sure that EV users are easily able to find suitable charging points across Wales, to help mitigate “range anxiety”? Options could include clearer, uniform signposting on major roads or the development of a Welsh Government app showing the location of charging points across Wales.
- Would it be sufficient for Welsh Government to develop its vision and strategy, and allow National Grid and District Network Operators to ensure the grid can be developed to accommodate its aspirations for EV charging in Wales? Or is more intervention needed?
- What could the Welsh Government do to support the co-location of renewable energy projects with EV charging infrastructure?

5. Planning for new infrastructure

50. Retrofitting of anything is less cost effective than including it in the original design. But the benefits of including provision for electric vehicles and active travel in designs for new build developments goes beyond a future cost saving, potentially delivering wider behavioural change.

51. The Welsh Government has recently published Planning Policy Wales: Edition 10. On the subject of EV charging infrastructure it says:

“Where car parking is provided for new non-residential development, planning authorities should seek a minimum of 10% of car parking spaces to have ULEV charging points. Planning authorities should ensure the level, location and type of charging provision is appropriate to the scheme and local circumstances.”⁵⁰

52. This only applies to non-residential developments. In relation to residential developments, the Institute of Welsh Affairs told the Committee:

“They’re building new-build housing estates and we’re getting to a point where people move in – in the first six months, you haven’t got access to any services for active travel or an electric vehicle charging point and you get into a habit: you run a diesel car and you drive to wherever you need to go, and then, six months later, if they put in a bus lane or an electric vehicle charging point or whatever that looks like, people are already in the habit.”⁵¹

53. The Community Transport Association called for “bay areas for community transport vehicles, along with charging installation points, at new hospital builds”⁵² as many of their operators supply door-to-door non-emergency patient transport, waiting at the hospital while patients receive treatment.

54. Including provision for electric vehicles at design stage has other benefits too. WPD told the Committee of a move to make and use energy locally for increased sustainability and efficiency. He described projects being delivered now that aim to create “housing estates of the future with electric vehicles, and smart grids,

⁵⁰ [Planning Policy Wales: Edition 10](#)

⁵¹ [Economy, Infrastructure and Skills Committee, 29 November 2018, para 333](#)

⁵² [Consultation response 09: Community Transport Association UK](#)

fibre to the home, heat pumps, home energy storage batteries”⁵³ with the aim for communities to be energy self-sufficient.

55. Dr Cipcigan suggested there was a need to go further. She told the Committee about a project coming to Cardiff in 2019 to “introduce a new solution for places where there is no off-street parking”, but called for bigger pilots to be developed in Wales to attract investors, saying:

“We can’t achieve that big agenda in 2040 with a push to 2032 without technological advance and having more diverse solutions, like, for example, dynamic charging on the road.”⁵⁴

56. Many areas of Wales are characterised by terraced housing with no off street parking. This presents a challenge for residents wishing to make the switch to electric vehicles. More work is needed to explore innovative charging solutions to help mitigate this issue.

57. The Committee also heard of the need to install the right infrastructure. The National Grid described the need to “think about the location, and then the location will dictate how fast the charging should be”.⁵⁵ For example, smart charging can be used at home that takes the power it needs overnight when there are less demands on the grid. However, at the supermarket, fast charging could be available to those who don’t have off-street parking, ensuring they can charge their car in the time it takes to do a weekly shop.

58. Understanding the technology is key to installing the right technology in the right place. Dr Cipcigan reminded the Committee that “technology is evolving very fast” and raised a concern that sometimes local authorities do not have the right expertise to choose the right charging bay.⁵⁶

Emerging Conclusion 9. The Committee has previously reported on the need to include provision of mobile phone coverage and broadband in the plans for any new build developments. It is clear that including electric vehicle charging points in the design for new builds is another important step towards behaviour change and creating liveable community infrastructure.

⁵³ Economy, Infrastructure and Skills Committee, 5 December 2018, para 62

⁵⁴ Economy, Infrastructure and Skills Committee, 29 November 2018, para 339

⁵⁵ Economy, Infrastructure and Skills Committee, 5 December 2018, para 116

⁵⁶ Economy, Infrastructure and Skills Committee, 29 November 2018, para 289

Emerging Conclusion 10. The inclusion of bays and charging points for electric vehicles in the plans for new hospitals and other healthcare facilities would be beneficial to community transport operators, and others.

Emerging Conclusion 11. There is a need to explore and develop emerging and innovative charging technologies. Welsh universities can play a key role in research and development in this area.

Discussion points:

- Planning Policy Wales: Edition 10 only makes recommendations for EV charging infrastructure for non-residential developments. The Committee feels that the policy would have been an opportunity to provide guidance for EV charging for residential developments too. Does planning policy need to be revised to provide guidance for charging on residential developments too? If not, why not?
- What are the potential charging solutions for those people without off street parking?
- Is the expertise to develop effective, fit for purpose charging infrastructure available in Wales – for example, in local authorities, the Welsh Government, Transport for Wales? Is the Welsh Government engaging widely enough with universities and the industry? Could further support be provided?

6. Urban / rural divide

59. Local needs and challenges should produce local solutions. Having the right charging infrastructure in the right place will be a key element for success. For rural areas, those solutions may be different to urban areas.

60. Evidence from Carmarthenshire Energy highlights limitations on grid capacity in many parts of rural Wales, and suggests this will be a significant challenge to overcome, particularly in providing rapid charge points on rural sections of link roads. The National Grid suggested that a market led approach in rural areas will result in an unequal distribution of chargers across the UK, with many rural areas likely to be left with insufficient capacity for their EV charging needs.

61. The UK Government's National Infrastructure Assessment recommendation that government should subsidise, by 2022, the provision of rapid charge points in rural and remote areas, where the market will not deliver in the short term.

62. WPD told that Committee that it is technically possible to provide for electric vehicle charging in rural areas. He said "in rural areas, where perhaps people are fed from a pole-mounted transformer rather than a ground-mounted substation"⁵⁷ upgrades would need to be made to support electric vehicle charging. The cost to the District Network Operator of doing so would be around £10,000 per upgrade – a figure that WPD considers to be proportionate and deliverable.

63. The National Grid pointed out that it was important to ensure rural areas were not overlooked, saying:

"Wherever you've seen a disruptive technology, if you leave it purely to market what generally happens is that towns and cities get done, and everybody else becomes a second class citizen."⁵⁸

64. Transport inequality is a key issue for some rural communities that are less well served by public transport. The Institute of Welsh Affairs felt that "investment in EV's should be prioritised in rural areas where the absence of effective alternatives makes use of the car essential".⁵⁹

⁵⁷ [Economy, Infrastructure and Skills Committee, 5 December 2018, para 56](#)

⁵⁸ [Economy, Infrastructure and Skills Committee, 5 December 2018, para 122](#)

⁵⁹ [Consultation response 17: Institute of Welsh Affairs](#)

65. EV charging infrastructure in rural areas does not only serve the communities in which it is located. These charging points will also serve through traffic. In written evidence, Neil Lewis suggested that the installation of pairs of rapid chargers and one fast charger at 40 mile intervals along Wales' trunk roads and major A roads would help to facilitate electric vehicle travel across the country⁶⁰.

66. The Institute of Welsh Affairs acknowledged that there was no "silver bullet"⁶¹ for tackling transport accessibility and equality, but suggested that for some communities in rural areas, access to electric vehicles via car clubs could be a part of the transport solution. Neil Lewis also advocated the use of car clubs as part of a wider approach, suggesting they could "solve a lot of problems in rural Wales, for access to services, and affordability".⁶²

Emerging Conclusion 12. It is vital that the needs of rural Wales are not overlooked as electric vehicles become more commonplace. Consideration should be given to how best to provide the right charging infrastructure in the right place to meet local needs. Consideration should also be given as to how to identify and support rural communities that are interested in trialling new transport solutions such as car clubs, as part of a wider transport solution.

Discussion points:

- How can "the market" be encouraged to invest in rural areas?
- Where should the Welsh Government be focusing funding? Should development of EV charging in more rural areas of Wales be left to the market, or should the Welsh Government intervene?

⁶⁰ Consultation response 6: Carmarthenshire Energy

⁶¹ Economy, Infrastructure and Skills Committee, 29 November 2018, para 301

⁶² Economy, Infrastructure and Skills Committee, 29 November 2018, para 296

How to submit a response to this draft report

The Draft report will be used as the basis of a discussion with the Minister for Economy and Transport later this term. The Committee would welcome your thoughts on the discussion points raised in this document to inform that discussion.

If you would like to submit a response to the emerging conclusions and discussion points you can do so by visiting

https://senedd.dialogue-app.com/drft_eis_report/

or by sending your responses to **SeneddEIS@assembly.wales**

The closing date for submitting responses is Friday 29 March 2019. Any responses received after this date will not be considered.

If you need assistance in preparing your response, or wish to respond in other ways, please contact the secretariat on the details above.

Please ensure that you have considered the Assembly's **[policy on disclosure of information](#)** before submitting information to the Committee.

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